REMARKS

Claims 1-17 are pending in the present application. Specifically, claim 4 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite. Claims 1, 2, 15 and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Japanese Patent No. 09306366A ("JP-66A") in view of U.S. Patent No. 4,816,386 to Gotoh et al. ("Gotoh"). Claims 3-14 and 16 stand rejected as allegedly unpatentable over JP-66A in view of Gotoh and further in view of Official Notice. In view of the amendments and the remarks that follow, Applicants respectfully submit that the rejections are now over come and the application is in condition for allowance.

Amendment to the specification

The specification has been amended to recite constituents "R_1-R_8 are the same or different from each other." The amendment is supported throughout the specification, for example, the diimonium salt compound of general formula 1 shown on the specification, at page 13, line 15 to page 14, line 1 show that R_1-R_8 can be the same. Entry of amendment and reconsideration on the merits is respectfully requested.

Claim 4 is Patentable

Claim 4 has been amended to recite "a solvent". Applicants respectfully submit that the indefiniteness rejection is now overcome. reconsideration and withdrawal of the indefiniteness rejection is respectfully requested.

Claim 1is Patentable over the References

Claim 1, as amended herein, is directed to an infrared absorption filter having a structure wherein an infrared-absorbing layer composed of a coloring material and a polymer serving as its dispersing medium is placed on a transparent substrate, and has light transmittance not higher than 30% in the near-infrared region, a difference of 10% or less between maximum and minimum values of transmittance in the visible light region and light transmittance of not lower than 50% at a wavelength of 550 nm, and maintains the above properties even after being left to stand for a long period of time in a temperature of 60°C and humidity of 95%.

The filter with the above properties, for example, can be used for a plasma display or the like and can absorb the unwanted infrared radiation emitted from the display, thereby making it possible to prevent erroneous operation of a remote control using infrared radiation. Further, the filter is unlikely to cause color change and can stably exhibit the above properties even under severe environment conditions such as high temperature and high humidity.

The primary reference, JP-66A, relates to an optical filter device. Figure 3 of JP-66A is a graph showing the light transmittance of the optical filter device. The Examiner states that the optical filter of JP-66A has light transmittance of less than 10% in the wavelength range of 800 to 1100 nm, difference of less than 10% between the maximum and minimum values of light transmission within the visible wavelength range of 450 to 650 nm and a light transmittance of 60% at a wavelength of 550 nm.

However, JP-66A does not disclose nor suggests the properties of the filter when the filter is left to stand under high temperature and high humidity conditions as recited in claim 1.

The Examiner, with regard to this point, states that Gotoh et al. discloses that when an infrared absorption filter is subjected to conditions similar to those of claim 1, the optical properties remained substantially the same with a small change of 2%. Further, the Examiner points out that it would be obvious to one with skill in the art to develop the infrared absorption filter of JP-66A to endure the above-mentioned conditions, or conditions similar thereto in an analogous manner as taught by Gotoh, for the purposes of increasing the durability and reliability of the infrared absorption filter.

Applicants respectfully disagree with these conclusions. Gotoh does not relate to an optical filter as claimed in claim 1, rather Gotoh relates to an "information recording composition." See, *e.g.,* col. 3, lines 2-3 and claim 1. Even if such an information recording composition absorbs near-infrared radiation, the radiation is absorbed as energy to record information, not to exhibit specific light transmittance such as those of an optical filter. Further, at col. 12, lines 26 - 30, Gotoh discloses that "the *optical recording media* before and after exposure to the laser beam showed only 2% of additional change in optical properties after being left in an environment of 60°C. and 90% relative humidity for 1000 hrs." (Emphasis added.) Indeed, this reference does not teach nor suggest the filter properties claimed in claim 1.

Therefore, Gotoh does not disclose nor suggests the necessity of maintaining the optical property of *the optical filter*, which pertains to a different field from that of *the optical recording*

media, after being left to stand in an environment of high temperature and high humidity. As a matter of course, Gotoh does not teach the conditions required for the optical filter to maintain its optical property when left in such an environment.

As stated, JP-66A relates to the infrared-absorbing optical filter which may be used similar to the infrared absorption filter of the present invention. However, as disclosed in the English language abstract submitted in an IDS herewith, the reference only teaches a spattering method of forming a silver film as a method for the formation of a film preventing from releasing line spectrum in a near infrared region. Like-formed infrared absorbing films, since they are of metal films such as a silver spattered film, tend to degenerate in high temperature, high humidity conditions, and if exposed to such conditions for a long period of time, their optical properties easily change owing to the degeneration.

On the contrary, as is apparent from amended claim 1, the infrared absorption filter of the present invention has the structure wherein an infrared absorbing layer composed of an infrared absorbing material and a polymer functioning as a dispersing medium is placed on a transparent substrate, and is completely different in the structure from the optical filter of JP-66A. Such a filter can be prepared by a simple production process and is highly applicable to small-lot production compared with a filter made by the spattering method.

The present invention provides an infrared absorption filter which has a completely different structure from that of the filter disclosed in JP-66A, which satisfies desired optical properties, *i.e.*, transmitting visible light and absorbing near-infrared, and maintains its optical

properties under high temperature, high humidity conditions for a long period of time. In examples 1 to 3, it is confirmed that the properties disclosed in claim 1 can be satisfied by infrared filters having the structure wherein an infrared absorbing layer composed of an infrared absorbing material and a polymer serving as its dispersing medium is placed on a transparent substrate.

The primary reference, JP-66A, only discloses an optical filter device with a silver spatter film and does not suggest that an infrared absorption filter which has the infrared absorbing layer composed of an infrared absorbing material and a polymer as their dispersing medium can retain its optical properties even under a high temperature, high humidity environment for a long period of time.

The secondary reference, Gotoh, does not relate to an infrared absorption filter but to an "information recording composition" whose desired properties are completely different from those of the infrared absorption filter. Further Gotoh does not disclose nor suggests the requirements for maintaining the specific optical properties of a filter when left to stand in conditions such as high temperature and high humidity.

Therefore, even considering both JP-66A and Gotoh, it is impossible to complete the present invention as the combination fails to disclose or suggest each and every element recited in claim 1.

For at least the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the obviousness rejection over claim 1.

Dependent claims 2 and 4-17 are Patentable

Each of claims 2 and 4-17 depend, either directly or indirectly, from independent claim 1. It is respectfully submitted that each of claims 2 and 4-17 is patentable at least by the virtue of its dependence from an independent claim which is nether disclosed nor suggested by the references. Accordingly, additional reasons for patentablity of each of claims 2 and 4-17 will not be proffered here. Reconsideration and withdrawal of the obviousness rejection of claims 2 and 4-17 is respectfully requested.

CONCLUSION

It is respectfully submitted that the present invention, as amended, is in condition for allowance and an early notification thereof being earnestly solicited.

The Office is authorized to charge any underpayment or credit any overpayment to Kenyon & Kenyon Deposit Account No. 11-0600. The Commissioner is authorized to charge any fees relevant to this filing to Deposit Account 11-0600. The Examiner is invited to contact the undersigned to discuss any matter relating to the instant application.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace lines 1-3 of page 11, with the following:

-- wherein R_1-R_8 are the same or different from each other and each represents hydrogen or alkyl having 1 to 12 carbon atoms, and X represents SbF_6, ClO_4, PF_6, NO_3 or halogen.--

IN THE CLAIMS:

Please cancel claim 3 without prejudice and disclaimer.

1. (Amended) An infrared absorption filter which has a transmittance of not higher than 30% in the near-infrared region in the wavelength range of 800 to 1100 nm;

a difference of 10% or less between a maximum value and a minimum value of transmittance in the visible light region in the wavelength range of 450 to 650 nm; and

a transmittance of not lower than 50% at a wavelength of 550 nm,

said filter, after being left to stand in the air atmosphere at a temperature of 60°C and a humidity of 95% for 1000 hours, having

a transmittance of not higher than 30% in the near-infrared region in the wavelength range of 800 to 1100 nm, and

a difference of 10% or less between a maximum value and a minimum value of transmittance in the visible light region in the wavelength range of 450 to 650 nm,

said filter having an infrared-absorbing layer on a transparent substrate, and

the infrared-absorbing layer being composed of a coloring matter, dye or pigment absorbing infrared radiation and a polymer serving as a dispersing medium.

2. (Unchanged) The infrared absorption filter according to claim 1, wherein after being left to stand in the air atmosphere at a temperature of 80°C for 1000 hours, the filter has a transmittance of not higher than 30% in the near-infrared region in the wavelength of 800 to 11100 nm and has a difference of 10% or less between a maximum value and a minimum value of transmittance in the visible light region in the wavelength of 450 to 650 nm.

4. (Amended) The infrared absorption filter according to claim [3] 1, wherein the amount of [the] a solvent remaining in the infrared-absorbing layer is 5.0 wt.% or less.

5. (Amended) The infrared absorption filter according to claim [3] 1, wherein the transparent substrate has a total light transmittance of not lower than 89%, a haze of not higher than 1.6%, a coefficient of static friction of not higher than 0.6 and a coefficient of dynamic friction of not higher than 0.6.

6. (Amended) The infrared absorption filter according to claim [3] 1, wherein the transparent substrate is a polyester film.

7. (Amended) The infrared absorption filter according to claim [3] 1, wherein the polymer constituting the infrared-absorbing layer has a glass transition temperature of not lower than 80°C.

8. (Unchanged) The infrared absorption filter according to claim 7, wherein the polymer constituting the infrared-absorbing layer is a polyester resin.

9. (Amended) The infrared absorption filter according to claim [3] 1, wherein the filter has an electroconductive layer of metal mesh having an aperture ratio of not less than 50% on the same side as the infrared-absorbing layer of the filter or on the opposed side thereof.

10. (Amended) The infrared absorption filter according to claim [3] 1, wherein the filter has a transparent electroconductive layer on the same side as the infrared-absorbing layer of the filter or on the opposed side thereof.

11. (Amended) The infrared absorption filter according [o] to claim 10, wherein the transparent electroconductive layer is formed of a metal oxide.

12. (Unchanged) The infrared absorption filter according to claim 10, wherein the transparent electroconductive layer has a repeatedly laminated structure in which at least three layers are laminated in the order of metal oxide/metal/metal oxide.

13. (Unchanged) The infrared absorption filter according to claim 12, wherein the constituent metal layer of the transparent electroconductive layer is formed of silver, gold or a compound containing any of them.

14. (Unchanged) The infrared absorption filter according to claim 1, wherein a hard coat-treated layer is formed as an outermost layer of the filter.

15. (Unchanged) The infrared absorption filter according to claim 1, wherein an antireflection layer is formed as an outermost layer of the filter.

16. (Unchanged) The infrared absorption filter according to claim 1, wherein an antiglare-treated layer is formed as an outermost layer of the filter.

17. (Unchanged) The infrared absorption filter according to claim 1, wherein the filter is disposed in front of a plasma display.